

5 SURVEILLANCE FOR ANTIMICROBIAL RESISTANCE

a Update on carbapenemase-producing Enterobacteriaceae

The Antimicrobial Resistance Laboratory and Culture Collection (AMRL-CC) of the Centre for Opportunistic, Tropical and Hospital Infections (CO THI) at the NICD has been testing referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemases. CPE have become a threat to healthcare and patient safety worldwide by compromising empiric antibiotic therapeutic choices and increasing morbidity, hospital costs and the risk of death. We are receiving clinically significant isolates from all specimen types based on antimicrobial susceptibility testing criteria for molecular confirmation. For January 2017, a total of 149 Enterobacteriaceae isolates were received. One hundred and thirty-seven isolates were screened, 117 of which expressed the carbapenemases that were screened for. Eight isolates expressed two carbapenemases (NDM and OXA-48 & variants) (Table 1). The majority of the screened isolates were *Klebsiella pneumoniae* (87) followed by *Enterobacter cloacae* (22). One isolate was not definitively identified at the time of the report.

It is important to note that these figures do not represent the current burden of CPEs in South Africa. However our data reveal the presence of carbapenemases in Enterobacteriaceae isolates from all specimen types, nationally. As a first step CPE surveillance is required to determine the extent of the problem in order to restrain the emergence and spread of resistance. The AMRL-CC is currently running a surveillance programme at national sentinel sites for CPE infections in patients with bacteraemia which provides representative data. This significant data will inform public health policy and highlight priorities for action. Controlling the spread and limiting the impact of CPEs in South Africa requires intensive efforts in both the public and private healthcare sectors going forward. NHLS and private laboratories are encouraged to submit suspected CPE isolates based on antimicrobial susceptibility testing (AST) criteria to AMRL-CC, NICD/NHLS. Please telephone (011) 555 0342/44 or email: olgap@nicd.ac.za; for queries or further information.

Source: Centre for Opportunistic, Tropical and Hospital Infections, NICD-NHLS; olgap@nicd.ac.za

Table 1. Enterobacteriaceae by CPE enzyme type for January 2017 and January-December 2016 at AMRL-CC, CO THI, NICD

Organism	NDM		OXA-48 & Variants		VIM	
	Jan-Dec 2016	Jan 2017	Jan-Dec 2016	Jan 2017	Jan-Dec 2016	Jan 2017
<i>Citrobacter freundii</i>	9	1	8	2	-	-
<i>Enterobacter asburiae</i>	-	2	-	-	-	-
<i>Enterobacter cloacae</i>	32	2	57	11	2	-
<i>Escherichia coli</i>	11	2	91	9	-	-
<i>Klebsiella pneumoniae</i>	287	17	534	65	14	1
<i>Klebsiella species</i>	-	1	6	2	2	-
<i>Morganella morganii</i>	6	1	2	-	-	-
<i>Proteus mirabilis</i>	-	-	2	1	-	-
<i>Proteus vulgaris</i>	1	-	-	1	-	-
<i>Providencia rettgeri</i>	17	3	1	2	-	-
<i>Serratia marcescens</i>	29	-	24	1	1	-
Unknown	-	-	-	1	-	-
Total	392	29	725	95	19	1

NDM: New Delhi metallo-beta-lactamase; **OXA:** oxacillinase; **VIM:** Verona integron-encoded metallo-beta-lactamase.